

**CLAIMS:**

What is claimed is:

1. A method for treating a disorder characterized by insufficient cardiac function in a subject, comprising administering to the subject a composition comprising adipose derived cells, such that the disorder is treated.
2. The method of claim 1, wherein the subject is human.
3. The method of claim 1, wherein the adipose derived cells are comprised of stem cells.
4. The method of claim 1, wherein the adipose derived cells are comprised of progenitor cells.
5. The method of claim 1, wherein the adipose derived cells are comprised of a combination of stem cells and progenitor cells.
6. The method of claim 1, wherein the disorder is congestive heart failure.
7. The method of claim 1, wherein the disorder is myocardial infarction.
8. The method of claim 1, wherein the method comprises administering a bolus of the adipose derived cells.
9. The method of claim 1, wherein the method comprises administering multiple doses of the adipose derived cells.
10. The method of claim 1, wherein the composition further comprises one or more angiogenic factors.
11. The method of claim 1, wherein the composition further comprises one or more arteriogenic factors.
12. The method of claim 1, wherein the composition further comprises one or more

immunosuppressive drugs.

13. The method of claim 1, wherein the composition is administered via an endomyocardial, epimyocardial, intraventricular, intracoronary, retrosinus, intra-arterial, intra-pericardial, or intravenous administration route.
14. The method of claim 1, further comprising administering the composition to the subject's vasculature.
15. The method of claim 1, wherein the adipose derived cells are grown in cell culture prior to being administered to the patient.
16. The method of claim 1, wherein the adipose derived cells are grown in culture conditions that promote differentiation towards a myocytic phenotype.
17. The method of claim 16, wherein the myocytic phenotype is a cardiac myocytic phenotype.
18. The method of claim 16, wherein the myocytic phenotype is a skeletal myocytic phenotype.
19. The method of claim 16, wherein the myocytic phenotype is a vascular smooth muscle myocytic phenotype.
20. The method of claim 15, wherein the cell culture conditions promote differentiation towards an endothelial phenotype.
21. The method of claim 15, wherein the cell culture is performed on a scaffold material to generate a two or three dimensional construct that can be placed on or within the heart.
22. The method of claim 21, wherein the scaffold material is resorbable in vivo.
23. The method of claim 1, wherein the adipose derived cells are modified by gene transfer such that expression of one or more genes in the modified adipose derived cells is altered.
24. The method of claim 23, wherein the modification results in alteration of the level of

angiogenesis in the subject.

25. The method of claim 23, wherein the modification results in alteration of the level of arteriogenesis in the subject.
26. The method of claim 23, wherein the modification results in alteration of the level of apoptosis in the subject.
27. The method of claim 26, wherein apoptosis of cardiac myocytes is altered.
28. The method of claim 23, wherein the modification results in alteration of the homing properties of the adipose derived cells.
30. A method for treating a disorder characterized by insufficient cardiac function in a subject, comprising administering to the subject a composition comprising adipose derived cells, wherein the composition is administered to the same subject from which the adipose tissue was originally harvested.
31. The method of claim 30, wherein the subject is human.
32. The method of claim 30, wherein the adipose derived cells are comprised of stem cells.
33. The method of claim 30, wherein the adipose derived cells are comprised of progenitor cells.
34. The method of claim 30, wherein the adipose derived cells are comprised of a combination of stem cells and progenitor cells.
35. The method of claim 30, wherein the disorder is congestive heart failure.
36. The method of claim 30, wherein the disorder is myocardial infarction.
37. The method of claim 30, wherein the method comprises administering a bolus of the adipose derived cells.

38. The method of claim 30, wherein the method comprises administering multiple doses of the adipose derived cells.
39. The method of claim 30, wherein the composition further comprises one or more angiogenic factors.
40. The method of claim 30, wherein the composition is administered via an endomyocardial, epimyocardial, intraventricular, intracoronary, retrosinus, intra-arterial, intra-pericardial, or intravenous administration route.
41. The method of claim 30, further comprising administering the composition to the subject's vasculature.
42. The method of claim 30, wherein the composition is administered to a different subject.
43. The method of claim 30, wherein the composition further comprises one or more immunosuppressive drugs.
44. A method of treating tissue ischemia in a subject comprising delivering a composition comprising adipose derived cells to an area of tissue in an amount effective to treat the ischemia by forming blood vessels that remain stable after the delivered composition is no longer present.
45. The method of claim 44, wherein the tissue ischemia is myocardial ischemia.
46. The method of claim 44, wherein the subject is human.
48. The method of claim 44, wherein the adipose derived cells are comprised of stem cells.
49. The method of claim 44, wherein the adipose derived cells are comprised of progenitor cells.
50. The method of claim 44, wherein the adipose derived cells are comprised of a combination of stem cells and progenitor cells.
51. The method of claim 44, wherein the composition further comprises one or more angiogenic

factors.

52. The method of claim 44, wherein the composition further comprises one or more arteriogenic factors.
53. The method of claim 44, wherein the composition further comprises one or more immunosuppressive drugs.
54. A method of treating tissue ischemia in a subject comprising delivering a composition comprising adipose derived cells to an area of tissue in an amount effective to treat the ischemia by expanding the blood carrying capacity of pre-existing blood vessels that remain stable after the delivered composition is no longer present.
55. The method of claim 54, wherein the tissue ischemia is myocardial ischemia.
56. The method of claim 54, wherein the subject is human.
57. The method of claim 54, wherein the adipose derived cells are comprised of stem cells.
58. The method of claim 54, wherein the adipose derived cells are comprised of progenitor cells.
59. The method of claim 54, wherein the adipose derived cells are comprised of a combination of stem cells and progenitor cells.
60. The method of claim 54, wherein the composition further comprises one or more angiogenic factors.
61. The method of claim 54, wherein the composition further comprises one or more arteriogenic factors.
62. The method of claim 54, wherein the composition further comprises one or more immunosuppressive drugs.
63. A method for promoting angiogenesis comprising contacting a localized area of tissue with a

composition comprising adipose derived cells such that angiogenesis within the area of tissue is induced.

- 64. The method of claim 63, wherein the adipose derived cells are comprised of stem cells.
- 65. The method of claim 63, wherein the adipose derived cells are comprised of progenitor cells.
- 66. The method of claim 63, wherein the adipose derived cells are comprised of a combination of stem cells and progenitor cells.
- 67. The method of claim 63, wherein the composition further comprises one or more angiogenic factors.
- 68. The method of claim 63, wherein the composition further comprises one or more immunosuppressive drugs.
- 69. The method of claim 63, wherein the induction of angiogenesis is used to treat ischemia.
- 70. A method for promoting arteriogenesis comprising contacting a localized area of tissue with a composition comprising adipose derived cells such that arteriogenesis within the area of tissue is induced.
- 71. The method of claim 70, wherein the adipose derived cells are comprised of stem cells.
- 72. The method of claim 70, wherein the adipose derived cells are comprised of progenitor cells.
- 73. The method of claim 70, wherein the adipose derived cells are comprised of a combination of stem cells and progenitor cells.
- 74. The method of claim 70, wherein the composition further comprises one or more arteriogenic factors.
- 75. The method of claim 70, wherein the composition further comprises one or more immunosuppressive drugs.

- 76. The method of claim 70, wherein the induction of arteriogenesis is used to treat ischemia.
- 77. A method for promoting muscle cell growth comprising contacting a localized area of tissue with a composition comprising adipose derived cells such that muscle cell growth within the area of tissue is induced.
- 78. The method of claim 77, wherein the muscle cells have contractile properties of cardiac myocytes
- 79. The method of claim 77, wherein the adipose derived cells are comprised of stem cells.
- 80. The method of claim 77, wherein the adipose derived cells are comprised of progenitor cells.
- 81. The method of claim 77, wherein the adipose derived cells are comprised of a combination of stem cells and progenitor cells.
- 82. The method of claim 77, wherein the composition further comprises one or more growth factors.
- 83. The method of claim 77, wherein the composition further comprises one or more immunosuppressive drugs.
- 84. The method of claim 77, wherein the promotion of muscle cell growth is used to treat ischemia.